UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/554,162	08/07/2006	Frank Diedrich	2003P06024WOUS	6581

22116 7590 11/25/2008

SIEMENS CORPORATION
INTELLECTUAL PROPERTY DEPARTMENT
170 WOOD AVENUE SOUTH
ISELIN, NJ 08830

EXAMINER	
CLEMENTE, ROBERT ARTHUR	
ART UNIT	**PAPER NUMBER**
1797	
MAIL DATE	**DELIVERY MODE**
11/25/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/554,162	DIEDRICH ET AL.	
	Examiner	Art Unit	
	ROBERT A. CLEMENTE	1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 October 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *6-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *10* is/are allowed.

6)☒ Claim(s) *6-9 and 11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 October 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed October 20, 2008 have been fully considered but they are not persuasive.

In regard to claims 6 and 11, both of these claims are product claims. Any process steps that do not add any further structural limitations to the claims are not deemed to affect the patentability of the claims. Applicant argues that the combination of Genovese and Mueller does not teach a detector that outputs "a peak corresponding to every detected group of material separately passing through the separation device". The examiner respectfully disagrees. Firstly, Mueller teaches using a thermal conductivity detector (TC) that receives all of the flow from the gas chromatograph column and either directs it to an exhaust or into the IMS depending upon the signal. In the combination with Mueller, an inline thermal conductivity detector is substituted for the thermal conductivity detector (TC) of Genovese. Thermal conductivity detectors are inherently capable of outputting a peak corresponding to every detected group of material separately passing through the GC column. Further, as discussed in column 5 lines 8 - 14 of Genovese, the TC outputs a signal whenever a substance other than the air carrier gas is present. Each substance will be a separate group of material that has passed through the GC column. Thus, the thermal conductivity detector inherently outputs a peak corresponding to every detected group of material. The computer (PC) receives the signal from the peaks detected by the TC and generates a signal to open the microswitch shutoff valve, or controllable inlet valve. The computer, or evaluation,

device generates a signal to open the microvalve for every peak the TC detects. Since the microvalve, which forms the inlet valve to the mass spectrometer (MS) in combination with Mueller, opens for every substance detected, each group of separated material is feed into the MS. As discussed in column 4 lines 60 - 63, when the TC only detects the clean air carrier gas, the clean air is exhausted from the TC. Thus, the fitting holding the TC, as shown in figure 1, forms an outlet coupled to the gas chromatograph that is capable of selectively releasing portions of the carrier gas so as to not enter the mass spectrometer.

Claim Rejections - 35 USC § 103

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 6 - 9, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,811,059 to Genovese et al. in view of German Patent No. DE 10105728 to Mueller.

Genovese teaches a miniature gas chromatography and ion mobility spectrometry system (GC/IMS), as shown in figure 1. The gas chromatograph is of the type which analyzes a substance mixture fed into a carrier gas stream, as shown by the sampler in figure 5. As disclosed in column 4 lines 12 - 16, the microchip gas chromatograph (Microchip GC) includes a capillary gas chromatograph column, which forms a separation device for separating materials of a substance mixture into groups passing through the column. A thermal conductivity detector (TC) is located

downstream from the gas chromatograph and detects the separated substances in a nondestructive manner. A thermal conductivity detector is inherently capable of outputting a peak corresponding to every detected group of material separately passing through the column. The thermal conductivity detector (TC) is linked to a computer (PC), or evaluation device, downstream of the detector. A signal generated by the detector (TC) is sent along a path (2) to the computer (PC). As disclosed in column 5 lines 8 - 14, the computer evaluates the signal and generates a control signal which is sent along another path (3) to a high speed shutoff microvalve. The PC is inherently capable of generating a signal responsive to each peak generated by the detector. When a specified substance is detected the computer signals the microvalve, which forms a controllable inlet valve, to open and allows the substance to be analyzed by the IMS. The microvalve is connected to the output from the chromatography column and the IMS is connected downstream form the gas chromatograph via the microvalve. As discussed in column 4 lines 60 - 63, when the TC only detects the clean air carrier gas, the clean air is exhausted from the TC. Thus, the fitting holding the TC, as shown in figure 1, forms an outlet coupled to the gas chromatograph that is capable of selectively releasing portions of the carrier gas so as to not enter the mass spectrometer. Genovese does not disclose using a mass spectrometer instead of an ion mobility spectrometer. Genovese also does not disclose arranging the thermal conductivity detector in-line between the output of the chromatography column and the microvalve.

In regard to the use of a mass spectrometer, gas chromatography and mass spectrometry systems (GC/MS) are well known in the art, as alluded to in column 1 lines

60 - 65 of Genovese. One of ordinary skill in the art would reasonably expect that a mass spectrometer could be used equivalently as the ion mobility spectrometer in Genovese and that the choice would merely depend on the samples to be analyzed. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Genovese to substitute the ion mobility spectrometer for a mass spectrometer depending upon the sample to be analyzed since both are well known in the art.

Mueller teaches a chromatography system that is shown in various embodiments in figures 1 and 4 - 6. Each of these embodiments uses in-line detectors (12, 16). The detectors are thermal conductivity detectors (21), the details of which are shown in figure 3 and discussed in paragraph [0023]. As disclosed, the in-line thermal conductivity detectors have internal cross-section dimensions that correspond to the cross-sectional dimensions of the separation column. This arrangement provides the advantage of allowing the gas stream to pass through the detector undisturbed, which will limit the effects the detector could have on disturbing the plugs of separated substances passing from the separation column. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Genovese to include an in-line thermal conductivity detector of the type of Mueller in order to allow for an undisturbed flow that would limit the effects of the detector on the sampling accuracy in the mass spectrometer.

In regard to claims 7 - 9, as disclosed in paragraph [0023] and shown in figure 3 of Mueller, the thermal, or heat, conductivity detector (21) comprises a measurement

path (30, 31) through which the substance mixture passes of which the cross-sectional dimensions at least approximately correspond to the cross-section dimensions of the separation column. As disclosed, the detector (21) also comprises heat resistors (22 - 25) arranged in a bridge circuit (26), wherein two heat resistors lie diagonally opposite one another in two different halves of the bridge being arranged in the measurement path.

In regard to claim 11, the combination of Genovese and Mueller, as discussed above, discloses all of the structural elements in claim 11.

Allowable Subject Matter

4. Claim 10 is allowed.

5. The following is a statement of reasons for the indication of allowable subject matter:

Method claim 10 now recites the limitation

"the inlet being controlled for introduction of all detected materials into the mass spectrometer..."

Genovese discloses, in column 5 lines 40 - 47, opening the microvalve to allow pulse of the sample to enter the IMS, which is substituted by a mass spectrometer in the combination with Mueller. The graph in figure 6 illustrates the operation of Genovese. The TC generates the bell shaped peak indicating the presence of a detected material. The microvalve is opened to generate five pulses, which generate the five sampling events of IMS, or what would be the MS in the combination with Mueller. In between these sampling events the sample is inherently being exhausted since the microvalve is

closed. Thus, Genovese does not teach or suggest introducing all detected materials into the mass spectrometer.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERT A. CLEMENTE whose telephone number is (571)272-1476. The examiner can normally be reached on M-F, 7:00-3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on (571) 272-1166. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

RAC

/Duane S. Smith/
Supervisory Patent Examiner, Art Unit 1797
11-21-08